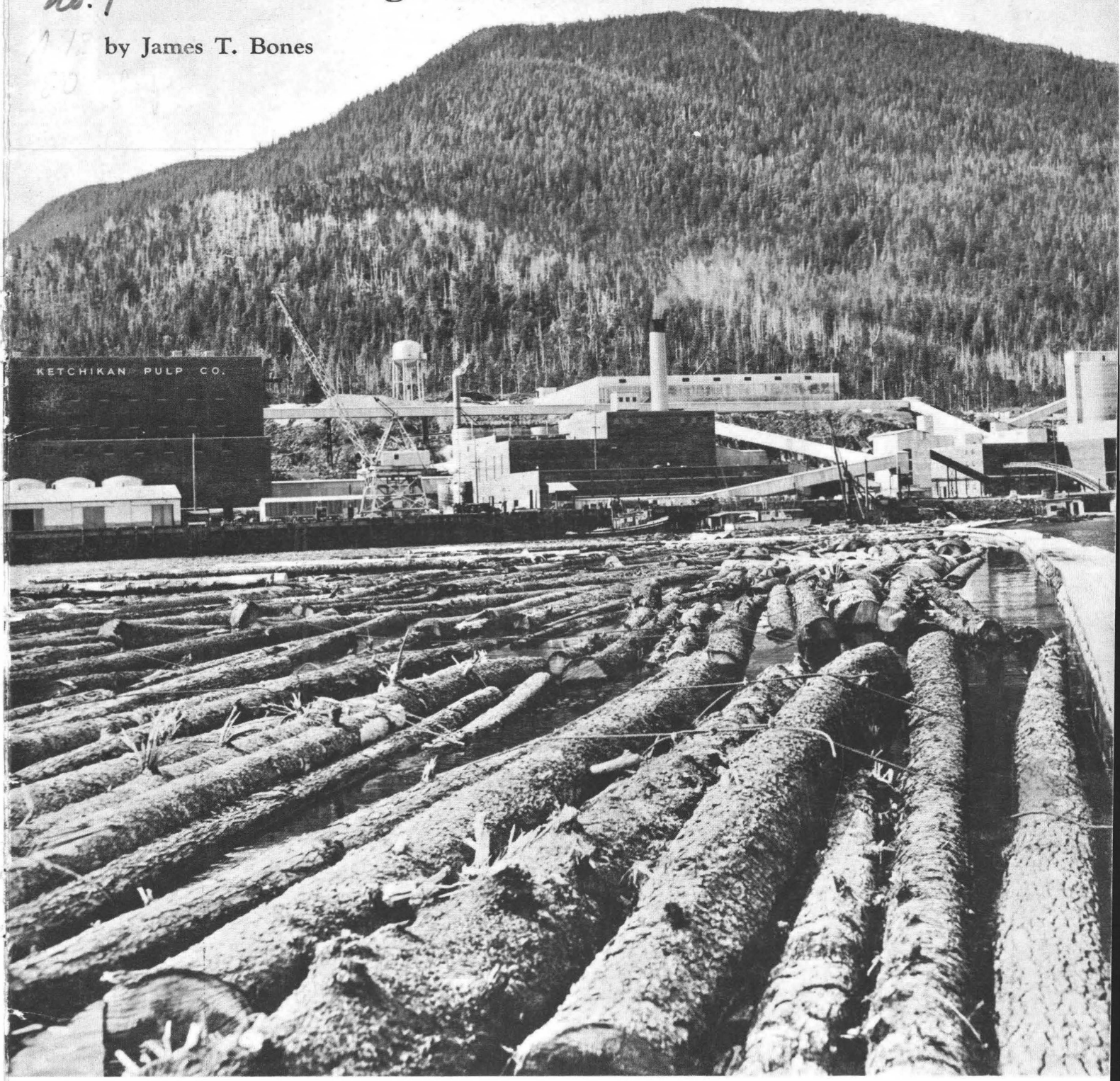
SD 11
A595
no. 1

Wood Processing in Alaska -- 1961

by James T. Bones



U. S. FOREST SERVICE RESOURCE BULLETIN NOR-1 1963

LIBRARY COPY
ROCKY MT. FOREST & RANGE
EXPERIMENT STATION

Northern Forest Experiment Station, Juneau, Alaska
Forest Service - U. S. Department of Agriculture
Richard M. Hurd, Director

THE AUTHOR

JAMES T. BONES is a Research Forester on the staff of the Northern Forest Experiment Station in Juneau. He assumed this position in July 1960 after working on forest inventory in the Division of Forest Economics at the Pacific Northwest Forest and Range Experiment Station, Portland, Oregon. He holds a Bachelor of Science degree in Soil Conservation, as well as a Master of Science degree in Forest Management from Utah State University, Logan, Utah.

Region 10 of the U. S. Forest Service, the Branch of Forestry, Parks, and Recreation of the Alaska State Division of Lands, and the Bureau of Land Management cooperated with the Northern Forest Experiment Station in making this canvass of Alaska wood manufacturers. Data on lumber production and stocks-on-hand was taken using Bureau of Census forms, which were then turned over to the Bureau of Census.

ON THE COVER

Two of the 16 dissolving pulp plants located in North America are found in Alaska. One is the Ketchikan Pulp Company operation (pictured on cover) and the second is the Alaska Lumber and Pulp Company mill near Sitka (pictured at right).

HIGHLIGHTS

The first complete canvass of Alaska wood products manufacturers was made to determine the source of their log or timber supply, products, markets, and amount and kind of residues. Background information was also collected on plant facilities. The data for calendar year 1961 showed that:

1. Over 99 percent of the 339 million board feet of logs consumed came from coastal Alaska tree species.

2. Seventy-nine percent of the total volume of logs consumed was processed into pulp by Alaska's two pulpmills.

3. Only 7 percent of the lumber produced by Alaska mills was sold within the State, although consumption of lumber and wood products in Alaska markets far exceeded the total production of Alaska lumber mills.

4. Of the 4.2 million cubic feet of residue generated by the State's wood processors, 79 percent was not used.

CONTENTS

	Page
BACKGROUND	1
PRIMARY MANUFACTURERS	2
SOURCE AND SPECIES OF LOGS CONSUMED	4
PRODUCTS	5
EXPORTS AND IMPORTS	5
PLANT RESIDUE	7

List of Tables

1.	Number of active sawmills in Alaska classified according to grading system used and geographic region, 1961	8
2.	Total output of Alaska's wood processors by product and geographic region, 1961	8
3.	Volume of logs consumed in Alaska by management or ownership source, type of plant, and geographic region, 1961	9
4.	Volume of logs consumed in Alaska by species, type of plant, and geographic region, 1961	10
5.	Market areas of Alaska's primary wood products by kind of product and geographic region, 1961	11
6.	Alaska lumber production by management or ownership source and geographic region, 1961	12
7.	Alaska lumber production by marketing area and geographic region, 1961	13
8.	Volume of plant residue from Alaska's sawmills by use, type of residue, and geographic region, 1961	14

BACKGROUND

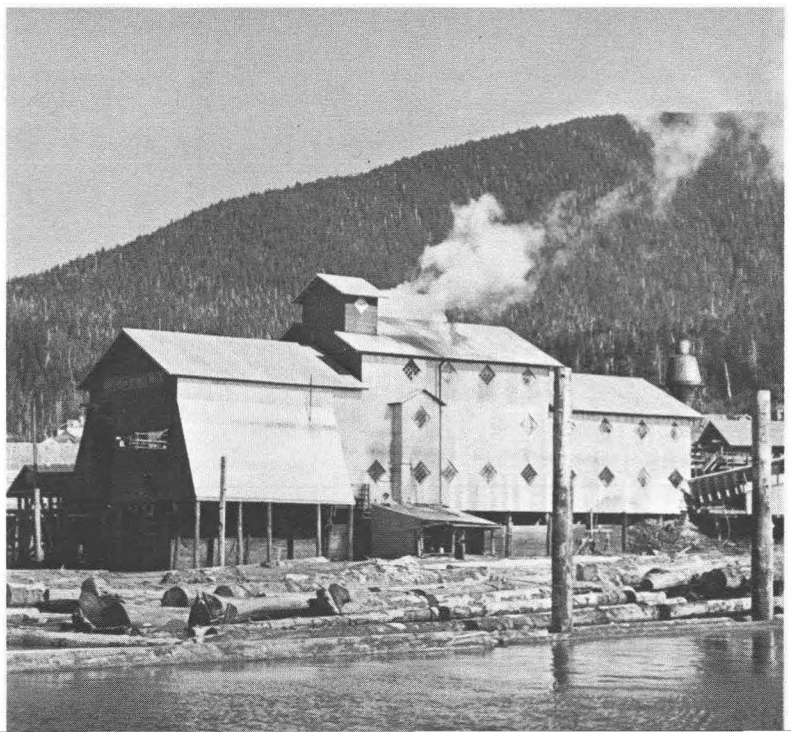
Alaska had 226,167 inhabitants in the 1960 census. Anchorage, its largest city and market center, had a population of 44,237 (excluding nearby military bases).

Alaska has extensive stands of commercially usable timber. Current estimates place the commercial forest land area of the Coastal region at between 5 and 6 million acres and possibly 25 to 30 million acres for the Interior. The Coastal stands are predominantly old-growth, Sitka spruce-western hemlock forests averaging 30 to 35 thousand board feet per acre. White spruce, paper birch, aspen, and balsam poplar are the major species of Interior commercial stands found mostly in close proximity to the major rivers. These stands average 3 to 5 thousand board feet per acre.

The larger wood processors of Alaska are located in the Coastal region in order to capitalize on low water transport rates, the marketing opportunities of the export trade, and the high volume timber supply. Generally, the high quality wood products are exported; the remainder are marketed locally.

A large portion of the small manufacturers operate in the Interior region. Their production is geared to local demands. In many cases, the operation is a fill-in between other seasonal employment.

Figure 1.--Larger sawmills, such as the one at left, are located in the Coastal areas near major transportation facilities. Small sawmills, such as the one at right, are geared to meet the local market requirements in communities of the Interior.



PRIMARY MANUFACTURERS

There were 92 operable primary wood products manufacturing plants in Alaska in 1961. Eighty-seven were sawmills, 67 of which were active. Listed below, by type of plant and general geographic location, are the numbers of primary manufacturing plants in operating condition in 1961:

	Coastal	Interior
Pulpmills	2	0
Preservative plant	1	0
Sawmills	36	51
Houselog mills	0	2
Total	39	53

The two pulp plants in Alaska are the State's largest wood users, accounting for 79 percent of the wood consumed in 1961. The Ketchikan Pulp Company, a 525-tons-per-day mill, started operations in 1954. The Alaska Lumber and Pulp Company mill near Sitka, a 460-tons-per-day plant, went into production in 1959. Both mills produce a high grade dissolving pulp, which is exported as pulp mat. Both mills use National Forest timber, operating under long-term contracts granted them by the U. S. Forest Service.

Not all of the 87 operable sawmills in Alaska were active during 1961. The number of sawmills segregated by activity class and general geographic location is:

	Coastal	Interior
Active	30	37
Inactive	6	14
Total	36	51

The 67 active sawmills consumed nearly 21 percent of the wood used in 1961. Although there were more active sawmills in the Interior than the Coastal region, nearly 97 percent of all lumber produced in Alaska came from Coastal sawmills.

Most Coastal sawmills export their select and shop grade material as rough green cants, and sell their common grade lumber within Alaska. Total production is primarily limited by their ability to market the common grades, which are used largely for construction. To expand their markets, some mill owners have established retail yards in the Interior population centers. Here, as elsewhere, their products compete with high quality, kiln-dried lumber from Canada and the Pacific Coast. Because construction lags in the winter, the demand for common grade lumber slackens so all the mills have winter shutdowns.

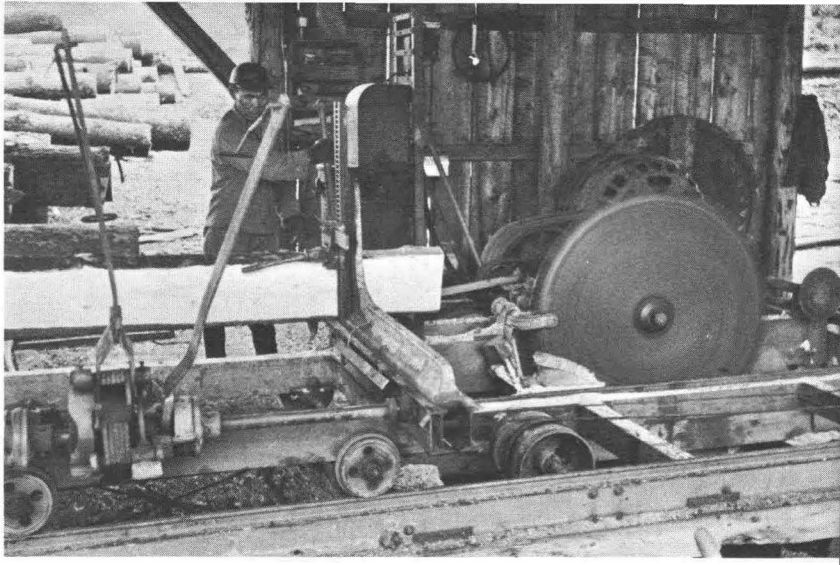


Figure 2.--This small sawmill supplies the timber and shoring requirements of a nearby mine and the houselog needs of the community of Red Devil.

Interior sawmills are characteristically small, portable, and erratically operated. Some are worked in conjunction with mining operations, while others serve needs of individuals in isolated communities. Some isolated mills cease operations when imported products become available because transportation facilities are established. Several new sawmills were springing up in 1961 on the Kenai Peninsula where cheap stumpage is available from homestead land clearing and much rough construction is taking place, particularly in the oil fields.

Twenty-eight percent of Alaska's sawmills sort their lumber into quality classes. Fifteen percent use nationally recognized quality grading rules; nine Coastal sawmills use Pacific Lumber Inspection Bureau rules, and one Interior sawmill uses National Hardwood Association rules (table 1).

Houselogs are usually manufactured by squaring two or three faces of the log. Another method is to turn the logs on a lathe and notch the under surface. Plants using the latter method are classified as houselog manufacturers in this report. One houselog plant was found to be a secondary manufacturer in that it remanufactured cants produced by neighboring sawmills, so the plant's production was not included in this report.

A wood preservative plant that began operation at Whittier in 1961 utilized western hemlock in producing piling, poles, railroad ties, and mine timbers. These products were marketed along the Alaska Railroad from Seward to Fairbanks. Loss of the plant's major crosstie customer--the Alaska Railroad--forced the plant to close in 1963.

Figure 3.--Freshly treated crossties are cooled in front of the incising shed at a wood preservative plant in Whittier.

SOURCE AND SPECIES OF LOGS CONSUMED

The following tabulation shows the source of the logs consumed in 1961 according to the management or ownership of the forest.

	Million bd. ft. (Scribner)	Percent
National forests	326.6	96
State	1.2	(1/)
Public domain	8.3	3
Private	3.0	1
Total	339.1	100

1/ Less than .5 percent

As the State acquires more land through selection, it is likely to become a more important source of timber.

Coastal species--western hemlock and Sitka spruce--provided over 99 percent of the volume of logs consumed, as is shown by the following tabulation.

	Million bd. ft. (Scribner)	Percent
Western hemlock	178.3	53
Sitka spruce	154.5	46
Other 1/	6.3	1
Total	339.1	100

1/ Includes western redcedar, white spruce, birch, and cottonwood.

Ninety-eight percent of the western hemlock and over 60 percent of the Sitka spruce was used for pulp. Only 2 percent of the western hemlock was sawn into lumber. The favored lumber species is Sitka spruce, accounting for over 84 percent of the production.

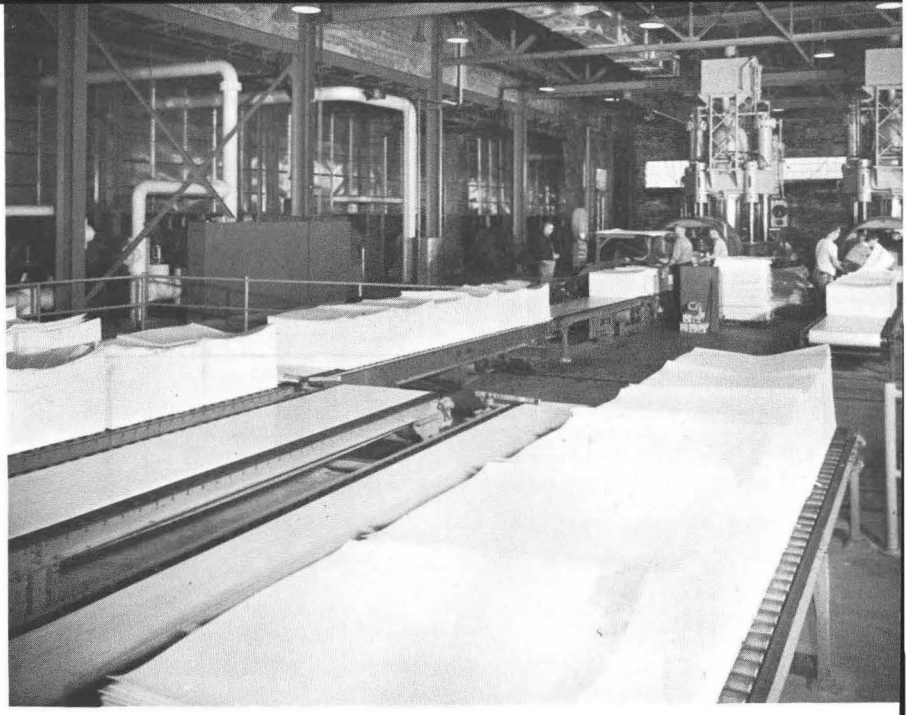


Figure 4.--This pulp mat will be sold on the world market and remanufactured into rayon, cellophane, and similar materials.

PRODUCTS

The total end products value of Alaska's timber processing industry in 1961 was estimated to be $48 million[1/]. Pulp mat, the State's most important wood product, accounted for over 79 percent of the production, while lumber, the second most important product, accounted for nearly 20 percent. All other products were minor in importance (table 5).

Logs exported from Alaska were not considered as a manufactured product and are excluded from table 2. In 1961, approximately 2 million board feet (Scribner rule) of western redcedar and 252 thousand board feet of cottonwood logs were exported to Japan.

Products resulting from remanufacturing were not canvassed. These products include fish boxes, furniture, and some houselogs. Over 14,000 fish boxes were produced.

EXPORTS AND IMPORTS

Today, as in the past, Alaska's wood processors rely heavily upon the export trade. Although continental United States lumber markets have been depressed recently, other countries--particularly Japan--have been aggressively seeking new sources of raw material. Japan was Alaska's most important customer during 1961.

1/ Rogers, G. W., and Cooley, R. A. Alaska's population and economy. 1962. (Unpublished report to the Division of State Planning, Office of the Governor of Alaska.)

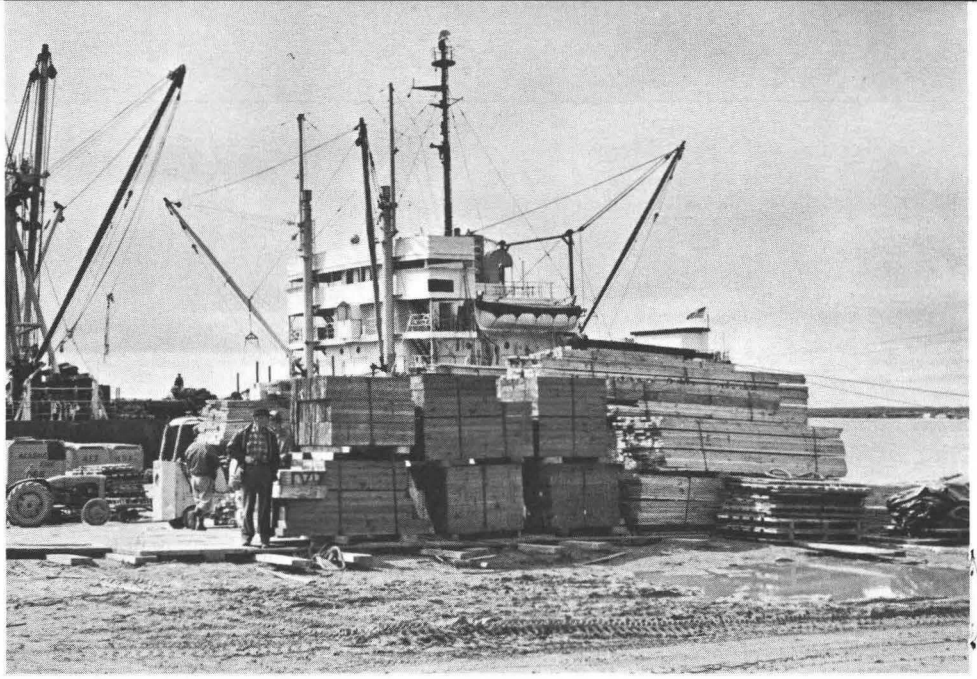


Figure 5.--The bulk of wood products used in Alaska is manufactured in other states. Shown is a shipment of lumber and decking from the Pacific Northwest being unloaded at Bethel.

In all, 93 percent of Alaska's total output of wood products left the State, as the following tabulation shows:

	Percent
Alaska	7
Other U. S. markets	36
Foreign countries	57
Total	100

The total production of both pulp plants was exported from Alaska; 56 percent to foreign markets and 44 percent to markets in other parts of the United States. Almost 65 percent of the lumber produced was exported.

While Alaskan wood processors have been developing foreign markets, Canadian and Pacific Coast producers have been making inroads into Alaska's local markets. Lumber and other wood products consumption in Alaska markets was estimated to be 100 million board feet in 1957 2/.

Undoubtedly, this consumption increased in the period 1957 to 1961. Certainly, the demands of the local market were not met by the 72.5 million board feet of lumber produced in Alaska in 1961, for only 25.3 million board feet were marketed in the State! The bulk of the State's requirements was imported. In isolated villages, the total lumber requirements are satisfied locally. In larger population centers, however, residents are willing to pay for better quality imported lumber and millwork they cannot procure locally.

2/ Little, A. D. Alaska's forest resources as a base for industrial development. 1961. (Unpublished report made to the State of Alaska.)

PLANT RESIDUE

Pulp mills produce insignificant amounts of wood residue because they use the entire log. The sawmills, however, produce large quantities of both coarse and fine residues. Fine residue includes sawdust and planer shavings, while coarse residue includes slabs, edgings, and trimmings.

The estimated volume of residue produced by Alaska wood processors and its disposition is shown in the following tabulation.

	M cu. ft.	Percent
Domestic fuel	171	4
Industrial fuel	685	16
Other	43	1
Unused	3,382	79
Total	4,281	100

The larger Coastal sawmills use a portion of their plant residue to produce steam. Most of the fine residue is burned in refuse burners. Many small Coastal sawmills burn all plant residue or pile it adjacent to the plant. Interior sawmills, for the most part, have little difficulty in disposing of plant residues. Coarse residue is used for domestic fuel or, in special cases, as shoring for neighboring mines. In some isolated communities, fine residue is used as insulation under local residences or as animal bedding.

There may be an opportunity to profitably chip the coarse residue of the larger Coastal sawmills. The volume of coarse plant residues estimated at some locations in 1961 seems large enough to justify investigating such a venture. These plants, located on the inland waterways, could transport residue or chips by barge at relatively low cost.

Table 1.--Number of active sawmills in Alaska classified according to grading system used and regional location, 1961

Grading system	Region		Total	
	Coastal	Interior		
	Number	Number	Number	Percent
PLIB[1/]	9	0	9	13
NHAGR[2/]	0	1	1	2
Other	6	3	9	13
None	15	33	48	72
Total	30	37	67	100

1/ Pacific Lumber Inspection Bureau

2/ National Hardwood Association

Table 2.--Total output of Alaska's wood processors by product and geographic region, 1961

Region and product		Total output
Coastal:		
Lumber	(Million board feet)	70.2
Pulp	(Thousand air-dry tons)	266.5
Poles	(Pieces)	100.0
Crossties	(Pieces)	9,352.0
Houselogs	(Thousand lineal feet)	3.0
Interior:		
Lumber	(Million board feet)	2.3
Houselogs	(Thousand lineal feet)	293.0
Mining stulls	(Thousand lineal feet)	25.0

Table 3.--Volume of logs consumed in Alaska by management or ownership source type of plant, and geographic region, 1961

Plant type and geographic region	Volume		Management or ownership source					
			National forest	Public domain	Total federal	State	Private	All ownership
	M cu.ft.	M bd.ft.[1/]	Percent					
Coastal:	66,353	394,026	96.3	1.9	98.2	0.2	0.6	99.0
Pulpmills	53,010	314,791	79.1	0.0	79.1	0.0	0.0	79.1
Sawmills[2/]	13,342	79,231	17.2	1.9	19.1	0.2	0.6	19.9
Treating plant	1	4	(3/)	0.0	(3/)	0.0	0.0	(3/)
Interior:	686	4,071	(3/)	0.6	0.6	0.1	0.3	1.0
Sawmills	656	3,894	(3/)	0.6	0.6	0.1	0.3	1.0
Houselogs	30	177	0.0	(3/)	(3/)	(3/)		(3/)
Total	67,039	398,097	96.3	2.5	98.8	0.3	0.9	100.0

1/ International 1/4-inch rule. Scribner log rule volumes can be approximated by multiplying International 1/4-inch log rule volumes by 0.8518.

2/ Includes 296 thousand board feet of cottonwood logs from State lands and 2,348 thousand board feet of red cedar from National Forest lands exported in round form.

3/ Less than 0.1 percent.

Table 4.--Volume of logs consumed in Alaska by species, type of plant, and geographic region, 1961

Plant type and geographic region	Volume		Species						
			Western hemlock	Sitka spruce	White spruce	Red-cedar	Paper birch	Cotton-wood	All species
	M cu.ft.	M bd.ft.[1/]	Percent						
Coastal:	66,353	394,026	52.6	45.6	0.0	0.7	0.0	0.1	99.0
Pulpmills	53,010	314,791	51.6	27.5	0.0	0.0	0.0	0.0	79.1
Sawmills[2/]	13,342	79,231	1.0	18.1	0.0	0.7	0.0	0.1	19.9
Treating plant	1	4	(3/)	0.0	0.0	0.0	0.0	0.0	(3/)
Interior:	686	4,071	0.0	(3/)	0.9	0.0	0.1	(3/)	1.0
Sawmills	656	3,894	0.0	(3/)	0.9	0.0	0.1	(3/)	1.0
Houselogs	30	177	0.0	0.0	(3/)	0.0	0.0	0.0	(3/)
Total	67,039	398,097	52.6	45.6	0.9	0.7	0.1	0.1	100.0

1/ International 1/4-inch rule. Scribner log rule volumes can be approximated by multiplying International 1/4-inch log rule volumes by 0.8518.

2/ Includes 296 thousand board feet of cottonwood logs from State lands and 2,348 thousand board feet of redcedar from National Forest lands exported in round form.

3/ Less than 0.1 percent.

Table 5.--Market areas of Alaska's primary wood products by kind of product and geographic region, 1961

Kind of product and geographic region	Volume	Market area				
		Alaska		Continental United States	Foreign countries	All markets
		Within 100 miles of plant	Over 100 miles from plant			
	M b. m. 1/	Percent				
Coastal:	362,893	2.6	3.7	36.0	56.8	99.1
Lumber	70,187	2.5	3.7	1.6	11.4	19.2
Export logs	2,435	0.0	0.0	0.0	0.6	0.6
Pulp	289,908	0.0	0.0	34.4	44.8	79.2
Poles	4	(2/)	0.0	0.0	0.0	(2/)
Crossties	349	0.1	0.0	0.0	0.0	0.1
Houselogs	10	(2/)	0.0	0.0	0.0	(2/)
Interior:	3,358	0.8	0.1	(2/)	0.0	0.9
Lumber	2,314	0.5	0.1	(2/)	0.0	0.6
Houselogs	951	0.3	(2/)	0.0	0.0	0.3
Mining stulls	93	(2/)	0.0	0.0	0.0	(2/)
Total	366,251	3.4	3.8	36.0	56.8	100.0

1/ Lumber tally equivalent.

2/ Less than 0.1 percent.

Table 6.--Alaska lumber production by management or ownership source and geographic region, 1961[1/]

Geographic region	Management or ownership source						
	National forest	Public domain	All federal	State	Private	Total	
	M bd. ft.[2/]						Percent
Coastal[3/]	61,291	6,475	67,766	534	2,236	70,536	96.8
Interior	70	1,463	1,513	181	600	2,314	3.2
Total	61,361	7,938	69,279	715	2,836	72,850	100.0
Percent	84.2	10.9	95.1	1.0	3.9	100.0	

1/ Houselog production reported to the Bureau of Census as lumber has been eliminated.

2/ Lumber tally

3/ Includes 349 thousand board feet of crossties

Table 7.--Alaska lumber production by marketing area and geographic region, 1961[1/]

Geographic region	Market area							
	Alaska			State of Washington	Yukon Territory	Japan	All areas	
	Within 100 miles of mill	Over 100 miles from mill	Entire state					
	M b. m.[2/]							Percent
Coastal[3/]	9,629	13,437	23,066	5,970	30	41,470	70,536	96.8
Interior	1,781	463	2,224	70	--	--	2,314	3.2
Total	11,410	13,900	25,290	6,040	30	41,470	72,850[3/]	100.0
Percent	15.6	19.1	34.7	8.3	0.1	56.9	100.0	

1/ Houselog production reported to the Bureau of Census as lumber has been eliminated.

2/ Lumber tally.

3/ Includes 349 thousand board feet of crossties.

Table 8.--Volume of plant residue from Alaska's sawmills by use, type of residue, and geographic region, 1961

Type of residue and geographic region	Volume	Use				
		Unused	Fuel		Other[1/]	All uses
			Industrial	Domestic		
	M Cu. ft.	Percent				
Coastal:	3,850	72.9	15.9	0.8	0.3	89.9
Coarse	2,118	32.7	15.9	0.8	0.1	49.5
Fine	1,732	40.2	0.0	0.0	0.2	40.4
Interior:	431	6.5	0.0	3.0	0.6	10.1
Coarse	265	3.4	0.0	2.5	0.3	6.2
Fine	166	3.1	0.0	0.5	0.3	3.9
Total	4,281	79.4	15.9	3.8	0.9	100.0

1/ Other uses include cattle bedding, insulation, and mine shoring.

GPO 986-057

Bones, James T.
1963. Wood processing in Alaska, 1961. Northern Forest Expt. Sta., Juneau, Alaska. 14 pp., illus. (U. S. Forest Serv. Resource Bul. NOR-1)

Findings of a complete canvass of the primary wood processors of Alaska in 1961.

Bones, James T.
1963. Wood processing in Alaska, 1961. Northern Forest Expt. Sta., Juneau, Alaska. 14 pp., illus. (U. S. Forest Serv. Resource Bul. NOR-1)

Findings of a complete canvass of the primary wood processors of Alaska in 1961.

Bones, James T.
1963. Wood processing in Alaska, 1961. Northern Forest Expt. Sta., Juneau, Alaska. 14 pp., illus. (U. S. Forest Serv. Resource Bul, NOR-1)

Findings of a complete canvass of the primary wood processors of Alaska in 1961.

Bones, James T.
1963. Wood processing in Alaska, 1961. Northern Forest Expt. Sta., Juneau, Alaska. 14 pp., illus. (U. S. Forest Serv. Resource Bul. NOR-1)

Findings of a complete canvass of the primary wood processors of Alaska in 1961.